Hanford Update

U.S. Department of Energy - Washington State Department of Ecology - U.S. Environmental Protection Agency

Summer 2006

Hanford cleanup draws diverse interest

Two members of the U.S. House of Representatives serving on the Appropriations Subcommittee on Energy and Water visited the Hanford Site in April. Congressmen Richard "Doc" Hastings (R., Washington) and Mike Simpson (R., Idaho) wanted to see how federal funds are being spent for nuclear cleanup. The all-day tour included briefings for various ongoing cleanup projects in the River Corridor, Central Plateau, and construction of the Waste Treatment and Immobilization Plant.

Congressman Doc Hastings (left) and Congressman Mike Simpson (second from left) were briefed by David Brockman, DOE-RL's assistant manager for the K Basin Project oversight. Terry Tyborowski (second from right), who supports the Subcommittee, is speaking with Keith Klein, DOE-RL manager.

Also in April, members of the Oregon Hanford Cleanup Board toured the Site to learn about cleanup status first-hand. In May, members of the Hanford Advisory Board and representatives from the local media visited the 100-N Area hosted by the Washington State Department of Ecology and the U.S. Department of Energy (DOE). Site project managers explained that calcium phosphate will be injected into ten wells along the Columbia River to establish a chemical barrier to prevent strontium-90 in the groundwater from reaching the river.

News and Updates

The State and Tribal Government Working Group (STGWG) traveled to Richland in May for one of its annual meetings. As part of the visit, members got a first hand glimpse of Hanford cleanup activities. The STGWG helps ensure that DOE facilities and sites are operated and cleaned up in compliance with applicable federal and state laws and regulations, Tribal rights (including those retained by treaty), and conferred by statute and the trust responsibility; as well as in a manner that protects human health, safety, and the environment.

In June, Senator Patty Murray and her staff visited the Site for a status briefing on cleanup activities, including a tour of the Waste Treatment and Immobilization Plant. A primary focus of interest was the status of cleanup in the River Corridor and transition status of the Pacific Northwest National Laboratory facilities out of the 300 Area into new facilities.

New members with the Hanford Advisory Board toured the Site in the spring to familiarize themselves with Hanford projects and cleanup status.

Summer Hanford public tours continue to be the big draw. The first group of visitors in June provided some interesting statistics. Enthusiasm for the free guided tours was indicated when registration for the more than 300 June spaces was "sold out" in 15 minutes. Due to overwhelming response, nine additional tours were scheduled for July. Registration for July's second set of public tours only lasted 12 minutes.

The majority of June tour visitors were local residents.

Nearly 20 percent of the visitors hailed from outside the Tri-Cities – some coming from as far away as Virginia, Pennsylvania, and North Carolina.

About 70 percent of the visitors were neither present nor past employees at Hanford. More than 80 percent of the June tour visitors were over 40 years old.

Historic B Reactor has always been viewed as the real "draw" of the public tours. Of the June tour group, 64 percent checked that they went on the tour because they were curious about the Hanford Site and wanted to know more about the site. Slightly more than 18 percent of the visitors indicated that the B Reactor was the primary reason for visiting Hanford.

To obtain feedback on the tours, visitors completed a questionnaire at the completion of the tour. June tour guides and coordinators received rave reviews. 38 percent of the visitors ranked the June tours as "outstanding," another 55 percent classified the tours "excellent," and 7 percent said "good." Only one person gave a "fair" rating.

Steady progress underway in Central Plateau characterization

Characterization of the complex contents of the 200-SW-2 operable unit solid waste burial grounds in the Central Plateau is underway. The Tri-Party Agreement (TPA) agencies have been involved in a collaborative process to identify data needs during the past year.

Twenty-three waste site groupings, called operable units, are located on the 200 Area of the Central Plateau. Two of these operable units contain solid waste. The operable unit designated 200-SW-1 includes the non-radioactive solid waste burial sites and the 200-SW-2 operable unit includes the radioactive burial sites.

News and Updates

Radioactive solid waste has been generated at the Hanford Site since the beginning of the site's defense mission in 1944. The solid waste has included materials such as dry contaminated equipment, solid laboratory waste, clothing, soil, and building rubble. Waste is typically buried 15 feet deep in trenches.

The 200-SW-2 operable unit includes 21 radioactive burial grounds that received waste until the 1960s. Only one burial ground is operational to receive Hanford-generated waste at this time. The 21 burial grounds are located in the 200 East and 200 West Areas and are comprised of more than 350 burial trenches. If aligned end-to-end, these trenches would extend beyond 40 miles in length. Characterizing these sites is difficult because of the variety of waste generators and waste types as well as variations in the quality and quantity of waste disposal records.

Progress Made

During the past 12 months, U.S. Department of Energy (DOE) and its contractor Fluor Hanford, along with the Washington State Department of Ecology, have extensively reviewed burial ground records, operations log books, and thousands of reports. The reviewing has resulted in an extensive project library.

A new data management plan was developed to outline long-term storage and configuration control for the project documents. A database also was created to describe the physical configuration for each burial ground and trench. Nearly 147,000 burial details have been documented.

The TPA agencies also located and organized recent and historic photos dating back to the 1940s for each burial ground. These photo images help identify trench locations, dates of operation, and (in some cases) waste contents.

Field Work

The agencies worked together to create a detailed data quality objectives (DQO) process. This process defined the non-intrusive sampling strategy the agencies would use to obtain information.

Geophysical investigations are being performed using ground-penetrating radar, magnetometer and total magnetic field methods. This information improves the boundary definitions of burial grounds, trenches and waste locations as well as the contents of the older burial grounds. Also, DOE is using radiation surveys and passive organic vapor surveys to locate areas of high radioactivity burials and possible organic burials.

A G-858G magnetometer is used for collecting total magnetic field and vertical gradient measurements to locate iron bearing materials in 200 Area burial grounds.

A Look Ahead

Later this summer, the agencies will work together to create a second DQO process that will identify other characterization methods (intrusive and non-intrusive) for assessing contamination. This characterization work will support the remedial investigation/feasibility study (RI/FS) process under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA).

DOE will prepare an RI/FS work plan for the 200-SW-2 operable unit in 2007. To address potential worker hazards, a safety and health plan will be developed for all field activities. Intrusive characterization at this operable unit will begin after the work plan is approved by the regulatory agencies. According to the RI/FS work plan, DOE will conduct a feasibility study that includes risk assessments and a detailed analysis of cleanup alternatives.

Each alternative will be evaluated against CERCLA's nine criteria, and preferred alternatives for each burial ground will be recommended by the agencies in a proposed plan. The proposed plan will be made available to the public for review and public comment.

First radioactive sludge from Hanford K Basins treated for disposal

Workers have finished treating the first radioactive sludge retrieved from a spent nuclear fuel pool at the Hanford Site.

The sludge was removed from a section of the K East Basin, one of two water-filled storage pools near the Columbia River, by contractor Fluor Hanford workers. The million-gallon basin once contained hundreds of tons of spent nuclear fuel that had corroded over the decades, resulting in approximately 42 cubic meters of sludge covering the floor of the basin. The sludge is made up of fragments of concrete from the basin walls, sand blown in from the desert, and fuel corrosion products.

An underwater look inside K East Basin.

"Treatment of this radioactive sludge presented unique challenges," said Mark French, project director at the DOE Richland Operations Office. "Working with this first sludge has taught us valuable lessons that we can apply to treating the balance of the K Basins sludge."

Approximately four cubic meters of sludge were retrieved from an offshoot of the basin, called the North Load Out Pit. During Hanford's plutonium-production era, the North Load Out Pit was used to load fuel irradiated in the K East Reactor into railroad cars for the trip to processing facilities on Hanford's Central Plateau. Most recently, the pit was used to hold "backwashed" sand from the basin's water-filtration system. The sludge from this area was less radioactive than the sludge in the rest of the basin and was identified for earlier treatment.

The sludge was pumped into large containers. Fluor Hanford crews transported the containers to Hanford's T Plant facility, where specialized equipment was used to process the material.

Workers began treating the sludge in October and finished the treatment in early June. The sludge was measured out and then mixed with grout in 55-gallon drums. The grout, a cement-like material, was used to solidify and encapsulate the sludge for safe storage and disposal.

"The nature of the sludge itself presented challenges," said Dale McKenney, Fluor Hanford vice president of Waste Stabilization and Disposition. "The consistency of the sludge in each container that came from the K Basins was quite different. It varied from being flighty and light, to having the consistency of thick pudding."

The process resulted in 332 drums of treated waste. The drums will be stored at Hanford's Central Waste Complex, while they are evaluated for disposal.

U.S. Department of Energy and the Washington State Department of Ecology welcome public participation at scoping meetings

Washington and Oregon stakeholders expressed differing views on some aspects of the Hanford Tank Closure and Waste Management Environmental Impact Statement (TC & WM EIS, DOE/EIS-0391), but protecting groundwater and the Columbia River remained a unanimous regional concern during four public scoping meetings in late March. This EIS stems from a January Settlement Agreement resolving litigation of the adequacy of the Hanford Solid Waste EIS. It will include a comprehensive, site-wide reanalysis of groundwater impacts and will supersede the Solid Waste EIS.

The U.S. Department of Energy (DOE) and the Washington State Department of Ecology (Ecology) held the meetings in Seattle, Portland, Hood River, and Pasco. About 200 citizens attended. Some stakeholders agreed with the EIS's integrated approach to analyzing waste management activities at the Hanford Site. Many expressed concern about the EIS becoming unwieldy – the "mother of all EISs." Stakeholders strongly agreed that DOE should not repeat the mistakes made in the Solid Waste EIS.

Before citizens gave formal comments, the meetings had opening presentations from DOE and Ecology and a short question-and-answer period. In response to persons who questioned the state's ability to legally challenge the EIS, the Ecology representatives pointed out that the state has not relinquished any option for a subsequent challenge to the EIS and that their participation helps ensure its quality. During the discussion period, several speakers commended DOE and Ecology for resolving the litigation and for DOE's agreement to reanalyze significant portions of the Hanford Solid Waste EIS by expanding the scope of the Tank Closure EIS.

Major Comment Themes

Several common themes emerged from the meetings:

- The EIS should provide the public a comprehensive analysis of all of the existing and potential sources of contamination in a readily understandable way.
- Independent experts should perform the EIS analyses.
- DOE must complete the Waste Treatment Plant and immobilize the waste now stored in aging underground tanks.
- DOE should take the time to do a comprehensive and credible study.
- The EIS scope should not include disposal of off-site low-level and mixed low-level waste at Hanford.
- The EIS scope should include 100 percent cleanup of the site, including waste currently buried in existing disposal facilities.
- The EIS scope should not include an alternative for retrieving less than 99 percent of the tank waste, consistent with the Tri-Party Agreement.

DOE is reviewing the comments received at the meetings, along with all written comments received during the scoping period. Requests for further information about the EIS can be directed to Mary Beth Burandt in DOE's Office of River Protection, at TC&WMEIS@saic.com or 509-372-7772.

Last big liquid waste sites near Columbia River cleaned up

Cleanup of the last of Hanford's major liquid waste sites along the Columbia River was completed in June. In the last decade, workers have removed 5.6 million tons of contaminated material from 65 liquid waste sites in the Columbia River corridor.

"This is a significant achievement in the cleanup of the Hanford Site," said Rick Donahoe, the Field Remediation Closure Project director at Washington Closure Hanford. "It finishes an entire class of waste sites, eliminating contamination sources that ultimately threatened the groundwater and the river."

Backfill of the 116-N-1 Crib and Trench in the 100-N Area began in mid-April, making it the last of Hanford's major liquid waste sites in the old plutonium production reactor areas to be cleaned up and backfilled.

"The amount of clean soil being moved to fill in the excavated site would cover a football field to the height of a 16-story building," Donahoe said.

The team completed another group of liquid waste sites in February. In the last three years, more than one million tons of contaminated materials were removed and disposed from five neighboring sites in K Area, including the massive 116-K-2 mile-long trench, two retention basins, and emergency pond and connecting pipelines.

The team's next challenge is to retrieve solid waste from burial grounds surrounding the reactors. When these two major tasks have been completed the area will be ready for re-use as envisioned in plans for the Hanford Reach National Monument.

Plutonium Finishing Plant Incinerator demolished

An excavator finishes demolition and cleanup of the 232-Z Incinerator at Hanford.

Workers at the U.S. Department of Energy's (DOE) Hanford Site completed the demolition of the 232-Z Incinerator building on June 26. The incinerator was one of the most contaminated facilities in the Plutonium Finishing Plant (PFP) complex. Two-thirds of the country's supply of plutonium for national defense was produced in the PFP area at Hanford between 1949 and 1990.

PFP's 232-Z Incinerator was a key component in Hanford's plutonium production from 1963 to 1972. The incinerator burned combustible material contaminated with plutonium, allowing the recovery of the valuable plutonium ashes for use in production of nuclear materials for national defense. Now, the incinerator is no more than a slab of concrete and debris.

"While the incinerator building was small in stature – measuring approximately 2,100 square feet – it looms large in the history of this plant that was once a workhorse of the Cold War," said Keith Klein, DOE-Richland Operations Office manager.

During the past two years, cleanup contractor Fluor Hanford removed contaminated debris and equipment – enough to fill approximately 40 specially designed waste containers, the equivalent of filling three 24-foot moving vans. This removal was required before demolition of the incinerator could take place.

"Workers entered the building time and again to remove contaminated equipment," said Bruce Klos, vice president of the Plutonium Finishing Plant Closure Project for Fluor Hanford. "They conducted the work safely and should be commended for their efforts to make sure their co-workers and the environment were protected during the cleanout of the facility."

On June 11, crews with Fluor Hanford began tearing down sections of the incinerator using a mechanical shear. Air monitors were used around the perimeter of the demolition site along with misters and fogging machines to ensure the safe demolition of the building and to control dust.

Some debris will be shipped to the Waste Isolation Pilot Plant, the nation's disposal facility for transuranic waste, in New Mexico. The remaining material is being disposed of in the Environmental Restoration Disposal Facility (ERDF), Hanford's low-level waste landfill.

A regulatory milestone in the Tri-Party Agreement between DOE, the U.S. Environmental Protection Agency, and the Washington State Department of Ecology calls for completing the demolition and removal of the building debris by September 2006.

Want to find out more about public meetings, comment periods, and workshops?

Put these websites on your favorites list for easy access to Hanford events:

Washington State Department of Ecology website
http://www.ecy.wa.gov/programs/nwp/calendar.htm

U.S. Department of Energy Hanford website
http://www.hanford.gov/public/calendar/

Hanford Advisory Board update

by Rick Jansons

In September, the Hanford Advisory Board will finalize the Board's goals for the coming year. Their purpose is to keep abreast of current issues at Hanford, and provide advice to the Tri-Party agencies regarding policies affecting the cleanup work at Hanford. Functioning as a citizen's advisory committee, the Board is comprised of representatives from many of the Hanford stakeholders. Because there are so many complex and demanding issues at Hanford, the Board developed a process to prioritize issues and help members use their time most productively.

The number one issue for Board members this year is continuing progress towards the completion and operation of the Waste Treatment and Immobilization Plant.

It is the Board's intention to work with the Tri-Party agencies and renew and redouble its efforts to ensure Hanford's Waste Treatment and Immobilization Plant (WTP) is successful.

The past year has brought great turmoil to the WTP project. The WTP is the linchpin for ensuring that millions of gallons of highly radioactive tank waste are safely retrieved, treated and stored, which will result in reducing contamination risk to people and the environment. Increasing cost and schedule estimates, budget shortfalls and technical issues continue to impact the successful construction and operation of the WTP. Board members continue to strongly support the WTP project, and the goal of ensuring Hanford's tank waste retrieval, treatment and disposal program is sound, credible and on a successful path.

The Board understands that problems may be expected to occur during the design, construction, and start-up of such a large, complex, first-of-a-kind waste processing and treatment facility. Several independent reviews were conducted over the past year to ensure the WTP budget, schedule, and designs are valid, appropriate and achievable. The U.S. Department of Energy (DOE) and its contractors, regulators, and stakeholders have continued to work together to address issues raised in these reports.

The Board has expressed concern about the ripple effects from the WTP delay. The entire tank waste program is based on the WTP beginning to process waste on a certain date. Schedule delays to the WTP impact many other areas of the tank waste program. Because the WTP will not be operational as soon as expected, tank waste must remain in aging tanks for a longer period of time. This raises concerns about the long-term integrity of the tanks, and additional costs associated with maintaining the aging tank farm infrastructure. The Board will continue to work on these and other important "balance of mission" issues next year.

Last year, the Board was pleased to see DOE and the State of Washington successfully resolve legal issues over the Solid Waste Environmental Impact Statement (EIS) that caused some Hanford cleanup progress to stall. A new Tank Closure and Waste Management EIS will be generated as part of the agreement reached to settle the lawsuit.

The Board supports the development of a defensible, credible EIS that is based on sound waste characterization. A successful EIS will take into account the cumulative impacts of the many wastes present at Hanford, destined to come to Hanford in the future and identify alternatives that efficiently clean up Hanford wastes to regulatory and Tri-Party Agreement requirements.

The Board plans for the coming year include reviewing and possibly providing guidance to the Tri-Party Agreement agencies on priority issues including: Three new contracts for major cleanup activities at Hanford are planned to be issued this year. Adequate budget for Hanford cleanup is always a concern to Board members. Progress on plans for cleanup and remediation of the BC cribs will be reviewed. The Board plans to work with other DOE sites on a national level on some common issues affecting cleanup and will begin with groundwater remediation and restoration discussions in September 2006.

This year will challenge the Board and the Hanford Site. However, the dedication to cleanup and risk reduction combined with the passion of the Board members will help the Board rise to the challenge.

News and Updates

Franco named assistant manager for DOE-RL River Corridor

Joe Franco joined the U.S. Department of Energy (DOE) Richland Operations Office staff on June 5 as the assistant manager for the River Corridor Project. Leif Erickson, who had been serving in that capacity, has been reassigned as the project manager for the Central Plateau Acquisition Project.

Franco has approximately 16 years of experience with DOE contractor, Washington TRU Solutions. Since October 2005, he had been the Remote-Handled Program manager at the Waste Isolation Pilot Plant (WIPP) in New Mexico with responsibility for overseeing various complex technical projects.

Before that, Franco served as deputy project manager for the Characterization Project. Franco also served as site project manager for two of the assigned sub-projects. As the deputy manager for Surface Operations and Maintenance, he was responsible for overseeing the WIPP Site Facility Project.

Franco earned a Bachelor of Science degree in engineering management from Southwest University. He is a Certified Project Management Professional through the Project Management Institute.

Single-shell tank performance assessment

In May, the single-shell tank (SST) performance assessment (PA) was publicly released by the U.S. Department of Energy. The SST PA evaluates radiological and chemical impacts associated with historical SST leaks and stabilized waste residuals remaining in tanks after the completion of the Tri-Party Agreement (TPA) retrieval activities (i.e., 99 percent). The SST PA is a living document that will be updated as more data becomes available, and will help guide the collection of future data for interim decision-making. It will also help guide the design of engineered portions of the tank waste retrieval and closure system.

Final closure of Hanford's tank farms will be implemented with regulatory approvals under the TPA and after completion of the Tank Closure and Waste Management (TC&WM) Environmental Impact Statement (EIS) and its Record of Decision. In order for the SST PA to proceed, a closure scenario had to be selected as a starting point. The chosen scenario, also under analysis in the TC&WM EIS, is landfill closure of the tank farms. This means removing as much waste as possible to meet TPA criteria, filling the tanks with grout or similar material to hold the residual waste in place, then building an earthen cap over the tanks to prevent moisture from penetrating and driving any escaping waste material to the groundwater. The landfill scenario was chosen to facilitate analyses of data in the SST PA and is not intended to prejudge the TC&WM EIS where it is one of the alternatives to be analyzed.

Hanford's Single-shell Tank C-106 (under construction in 1943). Major fieldwork is underway to prepare for retrieving the waste and preparing it for closure.

The SST PA was developed and released at this time to support Tank C-106 consultation requirements with the U.S. Nuclear Regulatory Commission as required by Appendix H of the TPA. Other uses of the SST PA analyses include supporting TPA tank waste retrieval activities, providing insights into possible tank farm interim measures and treatability studies, supporting residual waste determinations, and helping with the identification and prioritization of data needed to support tank farm cleanup actions.

The SST PA shows that past tank leaks have greater potential risk impacts through groundwater pathways than impacts resulting from post-retrieval tank residuals. For example, past leaks in all but one waste management area are projected to result in the groundwater directly beneath tank farms exceeding drinking water standards within the next 50 years — this has already occurred at the S-SX tank farms and elevated levels below the T tank farm may be partially attributable to past tank farm leaks or spills. As a result, remedial technologies are being screened and evaluated for deployment in the deep vadose zone. In addition, institutional controls are anticipated to be used to prevent the use of groundwater in the vicinity of the tank farms for up to 300 years following closure.

It is anticipated that contaminant concentrations will be within drinking water standards at the Central Plateau Core Zone boundary and at the Columbia River (which is at least six miles from the tank farms). However, analyses to that effect will be included in the TC&WM EIS and are not included in the SST PA. Impacts solely from TPA compliant tank residuals are shown in the SST PA to remain well below drinking water standards even 6,000 years from now when groundwater concentrations from those sources are projected to peak. The SST PA only addresses contamination from past tank leaks and tank residuals. Releases from these and other Hanford sources will be evaluated in the TC&WM EIS.

The SST PA will be formally submitted in July to the Washington State Department of Ecology and U.S. Environmental Protection Agency for their review.

The Initial SST PA for the Hanford Site is now available at the Hanford internet website at http://www.hanford.gov/orp/?page=14&parent=0.

Comment Periods

July 10 through August 11, 2006
Hanford Site Air Operating Permit Renewal

The Air Operating Permit regulates air emissions on the Hanford Site. The current permit will expire this year and is up for renewal. The U.S. Department of Energy submitted an application for permit renewal, and Ecology has prepared a draft permit.

July 17 through August 18, 2006
Hanford Site Air Operating Permit
Remove three 100-K Area facilities from the permit

The proposed changes to the Air Operating Permit will remove three 100-K Area facilities of the Hanford Site from the AOP, therefore the AOP will no longer regulate the emissions from the facilities. As the building operations end, they will undergo deactivation, decontamination, decommissioning, and demolition. The emissions will be regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

For more information on these and other comment periods, visit http://www.ecy.wa.gov/programs/nwp/commentperiods.htm.

Hanford Facility RCRA Permit Modifications

The U.S. Department of Energy transmitted Class 1 modifications to the Hanford Facility Resource Conservation and Recovery Act of 1976 (RCRA) Permit for quarter ending June 30, 2006, to State of Washington, Department of Ecology (Ecology). Pursuant to WAC 173-303-830(4)(a)(i)(B), the permittees of the Hanford Facility RCRA Permit are providing notice. Hanford Facility RCRA Permit Condition I.C.3, allows for quarterly notification of Class 1 modifications to be made to Ecology. Contact Greta Davis, Ecology at 509-372-7894 for further information about the Class 1 modifications.

Hanford Update

The Hanford Update newsletter provides general information about Tri-Party Agreement cleanup and compliance activities. The newsletter also contains information on public meetings, workshops, and other opportunities to participate in Hanford Site decisions. The newsletter is available on the Internet at www.hanford.gov/tpa/updates.html.

Hanford Happenings

July 10 - August 11, 2006: Hanford Site Air Operating Permit Renewal Comment Period. Contact Tanya Williams, 509-372-7883

July 17 - August 18, 2006: Hanford Site Air Operating Permit - 100-K Area Comment Period. Contact Tanya Williams, 509-372-7883

September 7-8, 2006: Hanford Advisory Board meeting, Red Lion Hanford House, Richland, WA. Contact Erik Olds, 509-372-8556

November 2-3, 2006: Hanford Advisory Board meeting, Western Hood River Inn, Hood River OR. Contact Erik Olds, 509-372-8556

Tri-Party Agreement
U.S. Department of Energy
Washington State Department of Ecology
U.S. Environmental Protection Agency

Hanford Cleanup Line: 800-321-2008

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